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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,262	02/26/2002	Jonathan C. Drake	FSCOP002	4368 97

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EXAMINER

LORENZO, JERRY A

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 09/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

CF-7

Office Action Summary

Application No.

10/084,262

Applicant(s)

DRAKE, JONATHAN C.

Examiner

Jerry A. Lorengo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 19-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 11-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-42 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5&6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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ETAILED ACTION

(1)

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-10, drawn to an apparatus for forming a dye sublimation image, classified in class 156, subclass 540.
- II. Claims 11-36, drawn to a method of forming a dye sublimation image, classified in class 156, subclass 230.
- III. Claims 37-42, drawn to a laminated substrate with a sublimated image, classified in class 428, subclass 195.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as the application of non-sublimated transfer images from a transfer sheet to a target substrate.

Inventions I and III are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the product as claimed can be made by another and materially different apparatus such as an apparatus utilizing vacuum assisted transfer wherein the article and transfer sheet are laid up and placed in a transfer envelope, which is evacuated and placed in a heated and then cooled environment to bring about sublimation transfer of the article.

Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the

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product as claimed can be made by another and materially different process such as laying up the transfer sheet and article, placing the assembly between a pair of temperature variable platens under pressure, followed first heating and then cooling the platens to bring about sublimation transfer of the article.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter as shown by their different classification, restriction for examination purposes as indicated is proper.

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species I: Claims 11-18, drawn to method of forming a dye sublimation image in a substrate using continuously pressurized heating and cooling zones;

Species II: Claims 19-23, drawn to a method of forming a formed object with a sublimated image including the step of thermoforming; and

Species III: Claims 31-36, drawn to a method of forming a sublimated image in a laminated substrate.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the

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examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Mr. Michael Lee on August 22, 2003 a provisional election was made with traverse to prosecute the invention of Group II, Species II, claims 11-18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-10 and 19-42 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

(2)

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites the limitation "the glass transition temperature" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites the limitation "the glass transition temperature" in line 2. There is insufficient antecedent basis for this limitation in the claim.

In the interest of compact prosecution it has been assumed that "the glass transition temperature" refers to the substrate.

(3)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,059,471 to Haigh.

Regarding applicant claim 11, Haigh discloses a method for forming a dye sublimation image in a substrate comprising the steps of (Figure 13; column 11, line 60 to column 12, line 15):

- (1) Providing a sublimation dye carrier 104 having an image thereon formed in a sublimatic dyestuff;
- (2) Providing a flat substrate 108;
- (3) Placing the image disposed on the dye carrier 104 against the flat substrate 108;
- (4) Conveying the substrate 108 and dye carrier 104 along a path with a first part 118 and a second part 120;
- (5) Providing pressure and heat against the substrate 108 and the dye carrier 104 in the first part 118 and heating the dye carrier to a temperature sufficient to cause the sublimation image carried on the dye carrier 104 to sublime and transfer into the surface of the substrate 108; and
- (6) Conveying the substrate 108 and dye carrier 104 from the first part 118 to a second part 120 where, under pressure, the dye carrier and substrate are cooled; and
- (7) Separating the spent dye carrier 104 from the sublimated imaged substrate 108.

Although Haigh disclose that the heating 118 and cooling 120 zones are kept under pressure, he does not specifically disclose, as per applicant claim 11, that the pressure is continuous. Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of invention to provide for a continuous pressure in the heating and cooling zones of Haigh motivated by the fact that without continuous pressure, intimate contact between the dye carrier

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104 and the substrate 108 could not be maintained thereby resulting in an ineffective sublimation and migration of the dye stuff from the dye carrier to the substrate which would cause mars, faint spots and generally unappealing decoration of the substrate.

Regarding applicant claims 12 and 13, Haigh discloses that the dye carrier 104 and substrate 108 are pressed together at a pressure of between 1 and 3000 psig, i.e., 14 and 3014 psi (column 13, lines 26-27). Again, although Haigh disclose that the pressure is maintained at every point at which the image is to be sublimated, it would have been obvious to one of ordinary skill in the art at the time of invention to provide for a continuous pressure motivated by the fact that without continuous pressure, intimate contact between the dye carrier 104 and the substrate 108 could no be maintained thereby resulting in an ineffective sublimation and migration of the dye stuff from the dye carrier to the substrate which would cause mars, faint spots and generally unappealing decoration of the substrate.

Although they do not specifically disclose, as per applicant claim 16, that the sublimation temperature is above the glass transition temperature, it would have been obvious to one of ordinary skill in the art of the time of invention that the method of Haigh would result in the sublimation occurring at a temperature above the glass transition temperature of the substrate motivated by the fact that Haigh, as per applicant claim 17, discloses that the cooling is accomplished until the substrate is cooled below its softening (glass transition) temperature (column 12, lines 9-12).

Finally, although Haigh does not specifically disclose that the continuous pressure has the effects set forth in applicant claims 14 and 15, the skilled artisan would have appreciated that a continuous application of pressure in the heating and cooling zones would avoid structural creep of the substrate given that Haigh teaches that the substrate and dye carrier must be cooled below their softening temperatures which would ensure that the substrate were structurally stable before they are separated. Furthermore, the skilled artisan would have appreciated that any structural variances imparted to the substrate during transfer would result in a substrate having an inconsistent image and differential penetration of the sublimated dyes therein.

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(4)

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,059,471 to Haigh in view of U.S. Patent No. 6,110,316 to Kobayashi et al.

Although Haigh, as set forth in section (3), above, disclose that the heating and cooling zones are continually pressurized, he does not specifically disclose, as per applicant claim 18, that the continuous pressure is provided by a gas pressure differential.

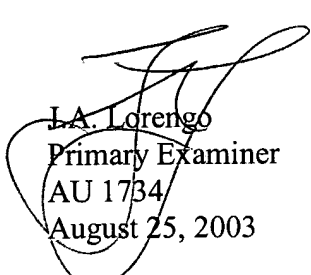
It would have been obvious to one of ordinary skill in the art at the time of invention to provide the continuous pressure utilized by Haigh using a gas pressure differential motivated by the fact that Kobayashi et al., also drawn to methods for the forming of heat transfer images on a substrate B from a transfer support S, disclose that it is known and useful to provide a continuous contact and pressure between the transfer support S and the target substrate B through the use of a vacuum (a gas pressure differential) device 51,52 because this ensures the removal of air between the support and substrate thus providing for intimate contact and avoids the formation of "voids" in the transfer-printed pattern (Figure 6A; column 23, lines 49-64)

(5)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry A. Lorengo whose telephone number is (703) 306-9172. The examiner can normally be reached on Monday through Friday, 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7115 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



J.A. Lorengo
Primary Examiner
AU 1734
August 25, 2003